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## School connectedness as psychological resilience factor in children affected by HIV/AIDS

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### ABSTRACT

Children affected by HIV/AIDS are at high risk for poor mental health outcomes. Social and psychological connectedness to school has been identified as an important resilience factor for youth affected by adversity (Centers for Disease Control and Prevention. (2009). *School connectedness: Strategies for increasing protective factors among youth*. Atlanta, GA: U.S. Department of Health and Human Services). Defined as "the belief by students that adults in the school care about their learning as well as about them as individuals" (Centers for Disease Control and Prevention. (2009). *School connectedness: Strategies for increasing protective factors among youth*. Atlanta, GA: U.S. Department of Health and Human Services), school connectedness has been shown to be associated with higher academic performance, increased mental health, and quality of life. However, few studies have examined school connectedness in sub-Saharan Africa, and none have examined school connectedness in relation to mental health in children orphaned by HIV/AIDS. Further, existing studies have relied on self-report measures. Against this background, the aim of the current study was to examine orphan status, school connectedness, and their interaction in relation to child mental health by using a multimethod design. 750 children between the ages of 7–11, recruited through South African community-based organizations (224 AIDS/HIV orphans, 276 non-AIDS/HIV orphans, 250 non-orphans; 51.2% girls), completed measures of school connectedness; children, caregivers, and teachers reported on child well-being using the Strengths and Difficulties Questionnaire. AIDS/HIV and non-AIDS/HIV orphans reported lower school connectedness than non-orphans. However, results demonstrated significant relations between school connectedness and overall mental health regardless of group, suggesting that school connectedness buffers against negative mental health outcomes regardless of orphan status. This study identifies a strategic point of intervention to build resilience against the cascading effects of HIV/AIDS and poverty in children in sub-Saharan Africa.

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HIV/AIDS; orphans; children; mental health; resilience; school connectedness

Between 2001 and 2012, the global number of children who had lost one or both parents to AIDS-related causes increased from 10 million to 17.8 million, 90% of whom live in sub-Saharan Africa (UNAIDS, 2013). As of 2012, South Africa is home to approximately 2.5 million AIDS orphans (UNAIDS, 2013), although the South African Child Gauge report (Jamieson, Berry, & Lake, 2017) estimates that there were 18.6 million orphaned children in South Africa in 2015. According to this report, 17% of children are orphans who have lost either their mother, father or both parents; 21% of children do not live with either of their biological parents; and 0.3% of children live in child-only households. In the Free State province, 27% of children are orphaned (Meintjes & Hall, 2012). Thus, despite the progress made in decreasing the incidence and prevalence of HIV, AIDS-related orphanhood

continues to be a significant problem for local communities, national governments, and international aid organizations (Sharp, Jardin, Marais, & Boivin, 2015).

Orphanhood in general (van IJzendoorn et al., 2011), and AIDS-orphanhood in particular (Li et al., 2008), is associated with significant detrimental impact on child mental health outcomes. In the context of HIV/AIDS, the definition of orphanhood has been expanded due to the limited usefulness of the tight definition of the construct of "orphanhood" (Skinner et al., 2006) to also include other indices of vulnerability (cf. the term "Orphans and Vulnerable Children"). However, most studies of HIV/AIDS affected children have used as their inclusion criteria the loss of at least one of both parents in their definition of "orphan". These studies demonstrate higher levels of depression, anxiety and

post-traumatic stress in AIDS-orphans compared to non-orphans (Cluver, Gardner, & Operario, 2007; Li et al., 2009), and orphans by other causes (Onuoha, Munakata, Serumaga-Zake, Nyonyintono, & Bogere, 2009; Sharp et al., 2014) both cross-sectionally and prospectively (Cluver, Orkin, Gardner, & Boyes, 2012; Zhao et al., 2011). AIDS orphanhood also appears to be associated with externalizing problems such as delinquency, acting out behavior, aggression, and attention deficit problems (Cluver et al., 2007; Doku, 2009; Sharp et al., 2014; Zhao et al., 2011).

While the scope of the problem seems large and unsurmountable, a handful of studies fail to demonstrate increased risk for mental health problems associated with AIDS-orphan status (Wild, Flisher, & Robertson, 2013). Consistent with a developmental psychopathology model of the mental health sequelae of AIDS orphanhood (Li et al., 2008; Sharp et al., 2015), it is likely that multiple risk and resilience factors dynamically interact with one another to influence individual differences in outcomes over time. A resilience factor that has received relatively little attention in Orphan and Vulnerable Children literature has been school connectedness. School connectedness is defined as “the belief by students that adults in the school care about their learning as well as about them as individuals” (CDC, 2009), or “the extent to which students feel personally accepted, respected, included, and supported by others in the school social environment” (Goodenow, 1993, p. 80). While the implications of school connectedness are obvious for scholastic outcomes such as school drop-out and retention (Anderman & Freeman, 2004), it also has clear implications for mental health outcomes (Shochet, Dadds, Ham, & Montague, 2006).

Research regarding school connectedness in South Africa is limited. A couple of studies suggest that school connectedness may have similar buffering qualities against poor outcomes in South Africa as they do in other countries (Nesser, 2007; Peltzer, 2003); however, these studies have not been conducted in the context of HIV/AIDS. Against this background, the aim of the current study was to examine orphan status, school connectedness, and their interaction in relation to child mental health by using a multimethod design with regard to sources of report for mental health problems (parent-, teacher-, and child self report mental health problems).

## Methods

### Participants

Participants were recruited from Mangaung Metropolitan Municipality, in the Free State Province of South Africa. Mangaung is the largest urban settlement in the

Free State, which is South Africa’s third largest province and third most urbanized province (Marais & Pelser, 2006). Mangaung’s population is approximately 82% African, the majority of whom are Sesotho. In Mangaung, 31% of children are orphaned. The final sample in the present study included 750 children between the ages of 7–11 years old ( $N = 750$ ; 51.2% female;  $M_{age} = 9.18$ ;  $SD = 1.37$ ). To determine orphan and AIDS-orphan status, the verbal autopsy method was used to classify orphan status and the cause of parental death by asking children and caregivers about the circumstances (e.g., health symptoms) surrounding the person’s death (Hosegood, Vanneste, & Timaeus, 2004). Within this sample, 224 (29.9%) of children were determined to be orphaned by AIDS-related causes, 276 (36.8%) orphaned by causes other than AIDS, and 250 (33.3%) were non-orphans. Of the orphaned children, 272 (54.6% of orphaned participants) had lost their mothers, 190 (38.2%) had lost their fathers, and 36 (7.2%) had lost both parents.

## Measures

### Child mental health

The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) is a measure of emotional and behavioral problems for children aged 3 to 17 years old. It includes 25 items and 5 subscales, which include emotional problems (e.g., “often unhappy, depressed, or tearful”), conduct problems (e.g., “often accused of lying or cheating”), inattention-hyperactivity (e.g., “restless, cannot stay still for long”), peer problems (e.g., “one good friend or more”), and prosocial behavior (e.g., “kind to younger children”). The measure also produces a total difficulties score, which is calculated by summing the emotional problems, conduct problems, inattention-hyperactivity, and peer problems subscales (i.e., all problem subscales; Goodman, 1997). Response options include “not true” (0), “somewhat true” (1), or “certainly true” (2), producing a total difficulties score ranging from 0 to 40. The SDQ has three forms: child self-report (“SDQ-Child”), caregiver-report (“SDQ-Caregiver”), and teacher-report (“SDQ-Teacher”). The availability of all three reports allows for multiple informants to provide data on a child’s mental health. Each informant’s form of the SDQ has shown adequate internal consistency in all subscales among American (range of  $\alpha = .62-.82$ ; Bourdon, Goodman, Rae, Simpson, & Koretz, 2005; Palmieri & Smith, 2007) and European (range of  $\alpha = .57-.88$ ; Goodman, 2001) samples (except the peer problems subscale,  $\alpha = .41-.62$  across all samples), and good internal consistency for the total difficulties score (range of  $\alpha = .80-.88$ ; Bourdon et al., 2005; Goodman, 2001; Palmieri & Smith, 2007). Validity of the SDQ is

supported by evidence that higher scores increase the likelihood that the child meets criteria for a psychiatric disorder (Bourdon et al., 2005; Goodman, 1997, 2001). The SDQ has been translated into over 60 languages and has been used previously in sub-Saharan Africa (Doku, 2009), and specifically in South Africa (Cluver, Gardner, & Operario, 2008; Sharp et al., 2014). The SDQ has shown good psychometric properties among the South African Sesotho-speaking population (Sharp et al., 2014). In the current study, the total difficulties scores from child-, caregiver-, and teacher-report forms of the SDQ were used as measures of child mental health, with higher scores indicative of greater mental health difficulties. Internal consistency varied, with the child self-report observing the least internal consistency (total difficulties score  $\alpha = .60$ ), while parent (total difficulties score  $\alpha = .69$ ) and teacher (total difficulties score  $\alpha = .84$ ) total difficulties scores were higher.

### **School connectedness**

Children completed 11 self-report items taken from the School Connectedness Scale (SCS; McNeely, Nonnemaker, & Blum, 2002; Resnick et al., 1997) and the School Support Scale (SSS; Hanson & Kim, 2007; WestEd, 2009). The SCS is a 5-item self-report measure of the bond students feel toward school. Items include "I feel close to people at this school," and "the teachers at this school treat students fairly." Responses are entered on a 5-point Likert scale, with responses ranging from "strongly disagree" to "strongly agree." Total scores range from 5 to 25, with higher scores indicating greater feelings of support in the school environment. Adequate reliability and concurrent validity of the SCS has been supported across 18 sociocultural groups in the United States (Furlong, O'Brennan, & You, 2011) and the SCS has been used previously with children in sub-Saharan Africa (Mapfumo & Muchena, 2013; Namy et al., 2017). The SSS is a 6-item self-report scale that assesses students' perceptions of caring relationships and high expectations in the school context. Items include "at my school, there is a teacher of some other adult who cares about me" and "at my school, there is a teacher or some other adult who believes that I will be a success." Responses are based on a 4-point Likert Scale, with responses ranging from "not at all true" to "very true." Total scores range from 6 to 24, with higher scores indicating greater support in the school environment. The SSS has been shown to have good reliability (Hanson & Kim, 2007). The California Healthy Kids Survey, which includes all 11 items from the SSS and SCS, has been used successfully in research settings in South Africa previously (e.g., Johnson & Sazarus, 2008). All 11 items from both the SCS and SSS were used in our

sample to provide a broader assessment of school connectedness. Combined scores from the SCS and SSS served as the independent variable, School Connectedness, and showed adequate internal consistency ( $\alpha = .77$ ).

### **Orphan status**

Children's status as "non-orphan," "other-orphan" (orphaned by causes other than AIDS), or "AIDS-orphan" (orphaned by AIDS-related causes) was determined using the Verbal Autopsy method. Verbal Autopsy is used in order to determine the cause of the parental death because death certificates are unreliable in reporting cause of death, and hospital data was not available. Verbal Autopsy has been used in previous research among orphaned children in South Africa (Cluver et al., 2007) and has been validated in South Africa in comparison to hospital notes (Hosegood et al., 2004) and hospital diagnoses (Kahn, Tollman, Garenne, & Gear, 2000). Verbal Autopsy proceeded by asking the child about symptoms that his/her parent exhibited during the illness that preceded death. Verification of three or more AIDS-defining illnesses (e.g., tuberculosis, recurrent pneumonia, oral candidiasis) is used to determine that a parent's death was due to AIDS-related causes; this method has a sensitivity of 89%, specificity of 93%, and positive predictive value of 76% in South Africa (Kahn et al., 2000). Cases that are uncertain are reviewed by two medical practitioners independently. Those in which cause of death was indeterminable were excluded.

### **Procedures**

The present study received approval from the University of Houston, the University of the Free State, and the University of Stellenbosch in 2010 and yearly thereafter until data collection was completed. In order to include children not attending school in the sample, the registries of local non-government organization (NGO) partners were consulted to identify orphans in the Free State Province. Children's caregivers were then contacted by study staff. Caregiver consent and child assent was obtained in person, and informed consent procedures were followed. When more than one caregiver was available, the one who knew the child best was included. Trained field workers conducted interviews and administered surveys in each participant's home, due to the limited availability of transportation among study participants. Confidentiality was maintained for all participant information. Caregivers and children completed assessments separately. Due to high rates of illiteracy, study staff read questionnaires and response options to participants in accordance with established research guidelines (Shaw, Brady, & Davey,

2011) in order not to sway participants' answers or break confidentiality. Trained field workers received supervision via Skype conferencing and face-to-face meetings throughout the duration of the study.

## Results

### Descriptive statistics

Descriptive statistics and bivariate correlations for continuous study variables and covariates are shown in Table 1. Pearson correlations revealed that school connectedness was negatively related to SDQ-Child self-reported total problems ( $r = -.17, p < .001$ ) and to SDQ teacher-reported total problems ( $r = -.09, p = .01$ ), such that children who reported higher school connectedness had lower self- and teacher-reported mental health problems. SDQ child self-reported and caregiver-reported total problems were related ( $r = .29, p < .001$ ), and SDQ caregiver-reported and teacher-reported total problems were related ( $r = .18, p < .001$ ). Bivariate correlations showed that age did not relate to SDQ total problems for any informant. Regarding gender, teacher-reported mental health problems were significantly lower for girls than for boys. Gender was therefore included as a covariate in moderation analyses.

### Group differences

ANOVA tests showing group differences between orphan status groups on outcome variables are presented in Table 2. Significant group differences were observed for school connectedness,  $F(2, 747) = 5.88, p = .003$ . Tukey tests revealed that non-orphans ( $M = 43.92$ ) had significantly higher school connectedness than other-orphans ( $M = 42.08, p = .003, d = .30$ ) and AIDS-orphans ( $M = 42.52, p = .04, d = .23$ ). However, other-orphans and AIDS-orphans did not significantly differ in their reports of school connectedness. Additionally, groups differed on caregiver-reported ( $F(2, 747) = 4.59, p = .01$ ) and teacher-reported ( $F(2, 740) = 7.96, p < .001$ ) child mental health problems. Tukey tests revealed that, according to caregiver report, AIDS-orphaned children had significantly more mental health problems ( $M = 15.23$ ) than non-orphans ( $M = 13.61, p = .01, d = .28$ ), and marginally significantly more mental health problems than other-orphans ( $M = 14.01, p = .06, d = .20$ ). Teachers reported that AIDS-orphaned children ( $M = 12.47, p = .03, d = .24$ ) and other-orphaned children ( $M = 13.23, p < .001, d = .35$ ) had significantly more mental health problems than non-orphans ( $M = 10.75$ ). Groups did not differ on self-reported SDQ total problems.

**Table 1.** Pearson correlations and descriptive statistics for study variables.

	Variable	1	2	3	4	5	6	7
1	Age (years)	–	-.034	.090*	.008	.041	-.062	-.006
2	Gender		–	.058	.007	-.065	-.172***	-.114**
3	School connectedness			–	-.171***	-.061	-.090*	-.160***
4	SDQ total self-report				–	.286***	.052	.668***
5	SDQ total caregiver-report					–	.179***	.729***
6	SDQ total teacher-report						–	.612***
7	SDQ total composite							–
Descriptive statistics	Mean (n)	9.18	384	42.83	12.10	14.24	12.17	.0002
	SD (%)	1.37	51.2	6.40	4.96	6.06	7.28	.67

Note: Age = age in years; Gender, male = 0 and female = 1; descriptive statistics are number and percentage female; School Connectedness = Sum of School Connectedness Scale and School Support Scale; SDQ-Child Self-Report = Strengths and Difficulties Questionnaire (SDQ) total scale score, child self-report; SDQ-Caregiver Report = SDQ total scale score, caregiver/parent report; SDQ-Teacher Report = SDQ total scale score, teacher report.

\* $p < .05$ . \*\* $p < .01$ , \*\*\* $p < .001$ .

**Table 2.** School connectedness and child mental health problems by orphan status.

	Non-orphans		Other-orphans		AIDS-orphans		$F(2, 747)$	$p$	Contrast
	$M$	$SD$	$M$	$SD$	$M$	$SD$			
School connectedness	43.92	5.74	42.08	6.66	42.52	6.63	5.89	.003	a > b; a > c
SDQ-child	11.81	4.68	12.24	5.34	12.24	4.79	.631	.533	–
SDQ-caregiver	13.61	5.79	14.01	6.28	15.23	5.99	4.59	.01	c > a; c > b
SDQ-teacher	10.75	6.82	13.23	7.50	12.47	7.28	7.96	<.001	b > a; c > a

Note: One-way ANOVAs with post-hoc Tukey tests were used to evaluate group differences. School Connectedness = Sum of School Connectedness Scale and School Support Scale; Non-orphans = children whose biological parents are still living; Other-orphans = children who have had at least one parent die from causes unrelated to HIV/AIDS; AIDS-orphans = children who have had at least one parent die from AIDS-related causes; SDQ-Child = Strengths and Difficulties Questionnaire (SDQ) total scale score, child self-report; SDQ-Caregiver = SDQ total scale score, caregiver/parent report; SDQ-Teacher = SDQ total scale score, teacher report.

a = Non-orphans; b = Other-orphans; c = AIDS-orphans.

### Moderation analyses

To evaluate whether the association between higher school connectedness and lower mental health problems depended on orphan status, we tested a moderation model using the PROCESS SPSS computational tool, Model 1 (Hayes, 2013). In the model, SDQ total mental health problems was the outcome variable, school connectedness was the predictor variable, and orphan status (0 = non-orphan, 1 = other-orphan, 2 = AIDS-orphan) was the moderator variable. To represent a multcategorical moderator with  $k$  groups, PROCESS creates  $k-1$  variables and adds them to the model, in addition to  $k-1$  products representing the interaction (Hayes, 2016). In this model, because the orphan status variable had three groups, two dummy variables were created to represent orphan status, as well as two interaction terms to represent the interaction between orphan status and school connectedness. Gender was included as a covariate in the moderation model. In order to incorporate multiple informants' reports and to reduce the number of analyses and shared method variance, a composite SDQ total problems variable was created from all three reports (child, caregiver, and teacher) of SDQ total problems. The composite variable was created by converting child, caregiver, and teacher SDQ total problems scores to standardized  $z$  scores, then calculating the mean of the three  $z$  scores. The composite SDQ total score was related to other study variables in similar patterns as the individual informant SDQ scores were (see Table 1).

The overall model (Table 3) was significant,  $F(6, 743) = 6.67, p < .001$ . Model parameters indicated that school connectedness was significantly, negatively related to the composite of child, caregiver, and teacher SDQ total problems scores ( $b = -.03, t = -2.32, p = .02$ ). Gender was also significantly related to the composite SDQ total problems score ( $b = -.21, t = -2.91, p = .004$ ) such that fewer mental health problems were reported for girls.

**Table 3.** Regression model testing the interactive effect of school connectedness and orphan status (non-orphan, other-orphan, or AIDS-orphan) on SDQ total problems.

DV: SDQ Total Problems	B	SE	t	p
Gender	-.21	.07	-2.91	.004
School connectedness	-.03	.01	-2.32	.02
Orphan status: D <sub>1</sub>	.37	.61	.61	.54
Orphan status: D <sub>2</sub>	-.36	.64	-.57	.57
School connectedness $\times$ orphan status: Int <sub>1</sub>	-.004	.01	-.29	.77
School connectedness $\times$ orphan status: Int <sub>2</sub>	.01	.01	.99	.32

Note: Overall model is significant,  $F(6, 743) = 6.67, p < .001, R^2 = .051$ . SDQ Total Problems = Composite score of child, caregiver, and teacher reports of SDQ total mental health problems. School Connectedness = Sum of School Connectedness Scale and School Support Scale. Orphan status, 0 = non-orphans, 1 = other-orphans, 2 = AIDS-orphans. D<sub>1</sub> coding: non-orphans = 0, other-orphans = 1, AIDS-orphans = 0. D<sub>2</sub> coding: non-orphans = 0, other-orphans = 0, AIDS-orphans = 1. Int<sub>1</sub> = D<sub>1</sub>  $\times$  School Connectedness. Int<sub>2</sub> = D<sub>2</sub>  $\times$  School Connectedness.

Orphan status, which was represented by dummy variable terms D<sub>1</sub> ( $b = .37, t = .61, p = .54$ ) and D<sub>2</sub> ( $b = -.36, t = -.57, p = .57$ ) was not significantly related to composite SDQ total problems. The interactive effect of orphan status and school connectedness on SDQ total problems was represented by two interaction terms, Int<sub>1</sub> ( $b = -.004, t = -.29, p = .77$ ) and Int<sub>2</sub> ( $b = .01, t = .99, p = .32$ ). Neither interaction term was significant. For multcategorical moderators, PROCESS also runs an omnibus test of the interactive effect using an F ratio (Hayes, 2016). This omnibus test was also not significant ( $F(2, 743) = 1.03, p = .36$ ). For more detail on the moderation model tested, see Table 3. Overall, this model accounted for 5.1% of the total variance in composite SDQ total problems scores ( $R^2 = .051$ ).

### Discussion

The aim of the current study was to examine orphan status, school connectedness, and their interaction in relation to child mental health with the ultimate goal of evaluating the potential for school connectedness as a strategic target of intervention to protect children from the cascading effects of HIV/AIDS in their communities. Results showed that while AIDS/HIV and non-AIDS/HIV orphans reported lower school connectedness than non-orphans, the buffering effect of school connectedness against mental health was not unique to AIDS orphans. Put differently, school connectedness appears to be a psychological resilience factor in this low-resource setting regardless of orphan status. Our study therefore confirms the role of school connectedness as an important resilience factor regardless of orphan status.

That orphans, compared to non-orphans, evidenced lower school connectedness does, however, raise two questions. First, why do orphans report lower school connectedness? One hypothesis for future research may be that the stigma associated with orphan status (Chi & Li, 2013) negatively affects the perception that orphans have of how much the school values the relationship with them. If this is true, programs for enhancing school connectedness in HIV/AIDS affected communities will have to incorporate an explicit focus on HIV/AIDS related stigma to address this perception. Similarly, programs on reducing HIV/AIDS related stigma in communities will have to explicitly link stigma to the effects it may have on school connectedness among orphans. A second hypothesis in explaining lower levels of school connectedness in orphans also warrants further investigation; and that is the possibility that ruptured caregiver attachment inhibits the development of the social-cognitive skills necessary to

make use of school as a safe basis. Both these hypotheses are important and should be the focus of further research in this area.

The second question raised by our finding of lower reported school connectedness in orphans despite failing to moderate the relation between orphan status and mental health problems, is whether interventions designed around school connectedness are better placed at the level of universal rather than indicated prevention. While studies are yet to determine the unique antecedents of school connectedness in sub-Saharan Africa, studies elsewhere have suggested ways in which school connectedness can be enhanced (Anderman, 2002; Shochet et al., 2006). Programs such as the Gatehouse project in Australia (Bond et al., 2004; Bond, Glover, Godfrey, Butler, & Patton, 2001; Patton et al., 2000), the National Longitudinal Study of Adolescent Health in the USA (McNeely et al., 2002; Resnick et al., 1997) and the California Healthy Kids Survey (Hanson & Kim, 2007) can offer guidance for adaptation and implementation. In such adaptation and implementation in South Africa specifically, other contextual factors relevant to school connectedness will need to be taken into account (Govender et al., 2013), which include the transition from apartheid education to a democratic and inclusive structure which has upended the established, and culturally-consistent authoritarian approach without yet replacing it with systems of democratic management in schools. In addition, crime, sexual violence and poor prospects for employment continue to cause stress, which may all factor into beliefs about whether adults in the school care about their learning as well as about them as individuals. That school connectedness has been shown to be negatively correlated with emotional distress, suicidality, violence, and substance use cross-sectionally (Anderman, 2002; Jacobson & Rowe, 1999; Resnick et al., 1997), and prospectively (Kuperminc, Leadbeater, & Blatt, 2001; Shochet et al., 2006), alongside increased optimism and improved academic performance (Anderman, 2002), suggest that overcoming these hurdles in adapting school connectedness programs, may, however, be worthwhile. Important in all these attempts is of course the first goal of getting HIV infected and affected children to school. Indeed, the Child Community Care study (Sherr et al., 2016; Skeen et al., 2014) have demonstrated that children not attending school regularly were at higher risk of developmental delay, greater emotional or behavioral problems, and lower quality of life; and that higher levels of community connectedness were associated with lower depression and trauma symptoms among children.

This study is not without limitations. The cross-sectional nature of the study as well as the fact that several

additional moderators were not modeled or assessed are of note. Risk factors that are likely to interact with school connectedness in the relation between orphan status and mental health outcomes include, amongst others, gender, age, poverty, caregiver substance use, psychopathology or chronic illness, and bullying (see Li et al., 2008; Sharp et al., 2015 for reviews). Similarly, other resilience factors such as a female caregiver, community support and the alleviation of poverty have been identified as factors that can effectively buffer the negative effects of orphanhood on child mental health outcomes (Sharp et al., 2015) and should be examined for their interactive effects with school connectedness. Finally, this study struggled with the same difficulties as most HIV/AIDS orphan studies. On the one hand, we consider the use of the “tight” definition of orphanhood (i.e., loss of one or both biological parents) as a limitation of the current study and call for consideration of a looser definition in mental health and school connectedness research in the context of HIV/AIDS. Accordingly, research in the future should consider not only the effects of the absence of a biological parent in the home but conversely, the presence of a loving caregiver (e.g., a grandmother or substitute caregiver). Put differently, it is more likely the quality of caregiving (at home or at school), rather than the category name of the caregiver that will determine the mental health outcome of children. On the other hand, we are sensitive to the fact that “double” orphans (children who have lost both their parents) are considered “true” orphans. As pointed out by Belsey and Sherr (2011), such children (compared to “single” orphans or other vulnerable children) may have experienced months of extended exposure to illness and grief as well as associated separations, economic hardships, stigma, trauma and threat. Future studies need to consider these subtle definitional issues to ensure that risk factors are appropriately identified for different sub-groups of vulnerable children.

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## Disclosure statement

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